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ETHICAL BEHAVIOR AND INFORMATION SYSTEMS CODES: THE EFFECTS OF CODE COMMUNICATION, AWARENESS, UNDERSTANDING, AND ENFORCEMENT

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Abstract

The ethical behavior of information systems personnel remains a key IS management problem in need of attention. Codes of ethics have become important mechanisms for influencing ethical behavior, yet their efficacy has not been proven. The communication and enforcement of codes within an organization are thought to be necessary for ensuring a code's success in influencing employee behavior. This study examined the effect of code communication on ethical behavior through its effects on code ***awareness*** *and* ***understanding****. Using data collected from 186 IS professionals, results revealed that code* ***understanding*** *by IS professionals was a significant determinant of their* ***ethical*** *behavior.* ***Understanding*** *was significantly influenced by* ***communication*** *and* ***awareness****.* ***Enforcement*** *was also found have a significant influence on behavior. Results have important implications for organizations using or intending to use codes of ethics to influence the behavior of IS personnel.*

Keywords: IS management, ethics, ethical behavior, codes of ethics, partial least squares

Introduction

The information systems profession is increasingly realizing the importance of promoting ethical behavior (Oz 2001). Examples of unethical behavior include fraud, misappropriation of company funds, breaches of confidentiality, falsification of records, unauthorized access of information, destruction or theft of information, violations of privacy, and software piracy (Oz 2001; Phukan 1995; Schwartz 2001). Ethical dilemmas may emerge during an IS professional's dealings with customers, competitors, suppliers, organizational peers, supervisors, or subordinates, or when working with information. The consequences of the unethical behavior of employees for an organization can include prosecution, lawsuits, financial loss, and negative publicity (Trevino 1986; Vitell and Davis 1990). Consequently ethics has become an important component of the overall IS management agenda and it is critical for organizations to focus on employing effective mechanisms to prevent or minimize unethical behavior among IS professional staff. Examples of mechanisms that are thought to influence the IS professional's behavior include prescreening of job applicants, ethics training, and familiarizing employees with unethical scenarios in the business environment (Loch and Conger 1996). In addition to these, one of the primary mechanisms used by companies to deter unethical behavior is a *code of ethics*.

A code of ethics is a set of rules used to guide the moral/ethical decision making and behavior of individuals. Because the law sets only minimum standards of behavior, some form of organizational regulation of ethical behavior is desirable (Schwartz 2001; Weller 1988). Codes of ethics fulfil this role by providing a statement of organizational values, duties and obligations (Cassell et al. 1997), and establishing that higher standards of behavior are expected of employees. While the subject of codes of ethics in the IS environment has been gaining increasing attention (Harrington 1994; Hilton 2000; Kreie and Cronan 2000; Pierce and Henry 1996; Udas et al. 1996; Vitell and Davis 1990), much remains to be understood about improving the implementation and administration of these codes.

In the general business literature, while some researchers have shown that the existence of a code significantly influences ethical behavior, perception, and intention (e.g., McCabe et al. 1996; Pierce and Henry 1996; Rich et al. 1990; Singhapakdi and Vitell 1990; Weaver and Ferrell 1977), others have found no such relationship (e.g., Akaah and Riordan 1989; Allen and Davis 1993; Badaracco and Webb 1995; Brief et al. 1996; Callan 1992; Chonko and Hunt 1985; Clark 1998; Cleek and Leonard 1998; Ford et al. 1982; Hunt et al. 1984). Thus despite their widespread use, the efficacy of a code of ethics has not been proven. This research, therefore, is driven by the need to identify factors that make codes of ethics effective in influencing the intention of IS professionals to behave ethically. While the content characteristics of a code are certainly presumed to be important in determining its effectiveness, this study recognizes that to be effective, a code of ethics should be successfully communicated and enforced. The objective of this paper is to examine the influence of code communication, awareness, understanding, and enforcement on the ethical behavior of IS professionals.

Understanding the factors that influence ethical behavior of IS professionals is undoubtedly of significant practical and theoretical value. It is thus important to identify factors that influence the effectiveness of codes of ethics and to determine how such codes can translate into a more ethical IS workforce. Results will thus have important implications for organizations using or intending to use codes of ethics to influence the behavior of IS personnel.

The next section of this paper draws on both the IS and business ethics literature and presents the theoretical background and hypotheses underlying the research model. Subsequent sections outline the research methodology and present results of empirical testing. In the final section, the results are discussed and the paper concluded.

Research Model and Hypotheses

Ethical behavior can be defined as the behavior of an IS professional who, in all work-related activities and functions, acts with responsibility and integrity, accepts responsibility for all acts, and uses special knowledge and skills for the advancement of human welfare. While the presence of a code of ethics within an organization is an indication that management values ethical behavior (Adams et al. 2001), it has also been recognized that "the mere existence of an ethics code in an organization does not guarantee that employees know about it, understand it, or use it to guide their attitudes and actions" (Wotruba et al. 2001 p. 61). The introduction of a code of ethics is thus only a starting point for creating the organizational conditions required for ethical behavior. Recent research has begun to suggest that codes will be ineffective in influencing employee behavior unless they have "penetrated into the minds of employees" (Schwartz 2001, p. 252). Such penetration is observable to the extent that employees are aware of the code and understand its ethical standards and the relevance of its provisions to their work (Schwartz 2001). Both code awareness and understanding have previously been identified as necessary for ensuring that a code impacts upon behavior (Ashkanasy et al. 2000; Dean 1992; Sims 1991). However, fostering code awareness and understanding can only be achieved if an organization properly institutionalizes the code (i.e., communicates the code and its contents to employees). Moreover, explicit enforcement may also be necessary for ensuring a code's success in influencing employee behavior (Adams et al. 2001; Kreie and Cronan 2000; Laczniak and Murphy 1993; Trevino and Nelson 1995). These relationships are explored next.

Awareness

Awareness refers to an employee's knowledge of the existence and whereabouts of the code as well as the knowledge that it should be consulted when the employee has a problem. It has been argued that even if employees might not have read or understood the code in its entirety, their knowledge that the code exists should influence their behavior (Trevino and Nelson 1995). Kreie and Cronan (2000) demonstrated that IS professionals were unlikely to engage in unethical conduct if they knew of the existence of an organizational code. With awareness comes the recognition that the code is an expression of the moral content of the organization's culture and that it is to be used as a referent when confronted with an ethical dilemma (Trevino 1986). It is thus hypothesized that

Hypothesis 1: Level of code awareness has a direct effect on the ethical behavior of IS professionals.

Understanding

It is possible that an employee can be aware of a code but not know anything about the issues it addresses (Wotruba et al. 2001). Therefore, code understanding is an important part of code penetration and refers to an employee's deeper comprehension of the

content of the code. The importance of code understanding for resulting ethical behavior has previously been noted (Ashkanasy et al. 2000; Weaver 1995), while ignorance of the code's content has been cited as an underlying cause of non-compliance (Schwartz 2001). Wotruba et al. (2001) argued that only when employees have a clear understanding of the code can it have the potential to transmit ethical values and standards. Through their understanding of the code, employees become sensitive to ethical issues and recognize the usefulness of the code as a guide to behavior. If employees lack understanding of the code's expectations there is a greater risk of non compliance. It is thus hypothesized that

Hypothesis 2: ***Degree of code understanding has a direct effect on the ethical behavior of IS professionals.***

Communication

Communication has been identified as an important component of a code's implementation (Fisher 1993; Harshman and Harshman 1999; Pierce and Henry 1996; Stead et al. 1990; Trevino and Nelson 1995), and may be an important mechanism for promoting awareness and understanding of the code. Unfortunately, communication of codes within organizations tends to lag behind their adoption (Somers 2001). Training (Stead et al. 1990), prominent displaying of the code throughout the organization (Fudge and Schlacter 1999), as well as distributing and discussing the code with employees (Weeks and Nantel 1992) have been identified as important ways in which a code of ethics can be communicated. Communication helps employees learn about the code and the guidelines it offers (Wotruba et al. 2001). If a code is not widely publicized to employees, then employees are unlikely to know of its existence, and consequently it would have no effect on their behavior (Cressey and Moore 1983). Communication helps employees become accepting of the code's principles, thus encouraging them to consider it as a referent and encouraging them to develop a more comprehensive understanding of its content. It follows that

Hypothesis 3a: ***The extent of code communication influences ethical behavior of IS professionals through its effects on awareness.***

Hypothesis 3b: ***The extent of code communication influences ethical behavior of IS professionals through its effects on understanding.***

This paper further theorizes that when the code is better understood, it can more usefully serve as a referent. In the absence of understanding, awareness may not in itself result in appropriate ethical judgements. Moreover, since awareness must precede understanding, it is hypothesized that

Hypothesis 4: ***Degree of code understanding mediates the relationship between code awareness and ethical behavior.***

Enforcement

For codes of ethics to be effective they must be enforced (Allen and Davis 1993). It has been suggested that enforcement through monitoring and surveillance as well the threat of punishment and sanctions must exist (Brief et al. 1996; Kelman 1961). Murphy (1995) suggests that without enforcement, codes of ethics are not worth the paper they are written on. Moreover, failure to enforce the code may create a perception of "misalignment between words and deeds" and thus have little effect on behavior (Trevino and Nelson 1995, p. 205). Fear of punishment is an important input into decision making when confronted with ethical dilemmas (Adams and Tashchian 1995), while lack of punishment provides opportunities for unethical behavior (Zey-Ferrell and Ferrell 1982). It is thus reasonable to assume that without enforcement, codes of ethics do not act as a sufficient deterrent (Brief et al. 1996), and are unlikely to affect ethical behavior. Taken together with Ferrell and Skinner's (1988) finding that the enforcement of codes of ethics is effective in influencing ethical behavior, it is hypothesized that

Hypothesis 5: ***Enforcement has a direct effect on ethical behavior of IS professionals.***

The relationships hypothesized above can be depicted as a structural model (Figure 1). Prior studies support the inclusion of **age** as an important control variable in the study of ethical behavior (Adams et al. 2001; Brady and Wheeler 1996; Ruegger and King 1992; Udas et al. 1996). Since younger individuals are more likely to act practically than ethically (White and Dooley 1993), and since age and corresponding experience can result in greater ethical sensitivity (Loe et al. 2000), a positive effect of age on ethical behavior is expected.

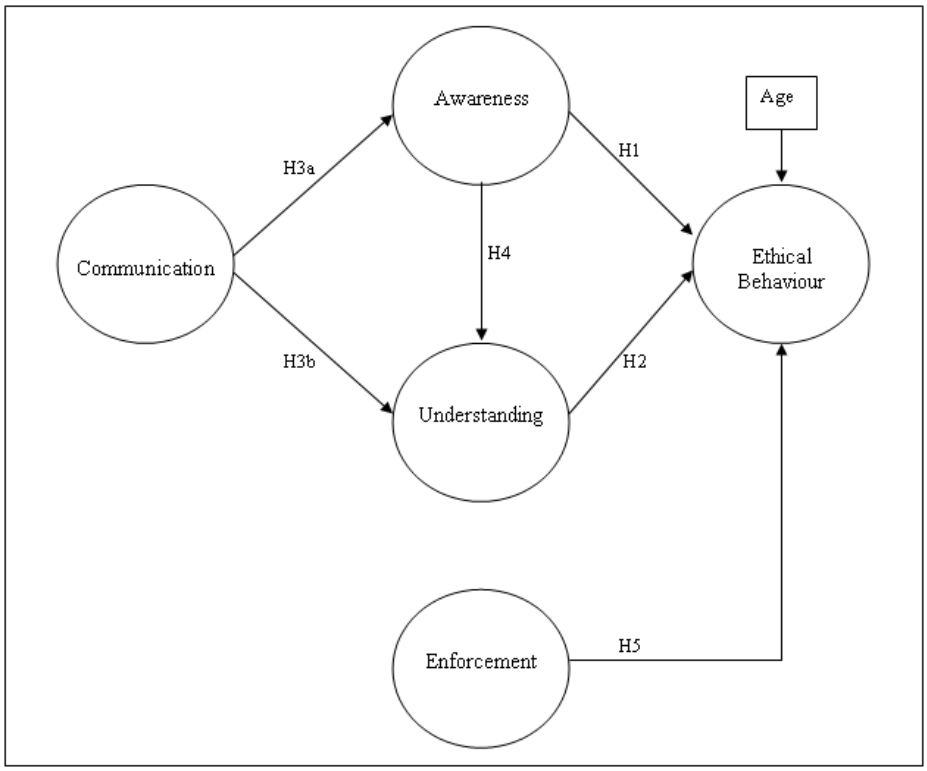


Figure 1. Research Model

Research Methodology

Sample

To test the hypothesized model (Figure 1), a pilot-tested questionnaire was administered to a sample of IS professionals subscribing to an online IT news site in South Africa. The questionnaire was administered online and was posted on the IT news site for two weeks. Anonymity was guaranteed in order to encourage respondents to answer all questions truthfully.

A total of 738 responses were received in the 2 week period. Respondents who indicated that their organization did not have a code were removed from the sample as were those who did not specify the type of code (General Business or IS Specific) in place. Of the remaining 374 responses, 186 indicated that an IS-specific code of ethics existed within their organization. These 186 responses constitute the sample for the study. Table 1 illustrates the sample characteristics.

The sample is heavily biased toward males. The majority of respondents are aged between 26 and 45 years, and have a fair degree of management experience. Given this demographic profile, generalizing results outside of the sample may be problematic.

Measurement

Each of the study's constructs was measured using multiple items adopted from the IS literature. Six statements were used to measure ***Ethical Behavior***. These statements were adapted from the work of Udas et al. (1996), and are intended to cover each of three Association for Computing Machinery canons: (1) acting with integrity and responsibility, (2) accepting responsibility for acts, and (3) using special knowledge and skills for the advancement of human welfare. The statements were all phrased in the first person, and respondents were asked to indicate whether or not they agreed with each statement measured on a seven-point Likert scale. It is important to recognize that intention to behave ethically rather than actual ethical behavior is captured by the instrument. However, according to the theory of reasoned action (Ajzen and Fishbein 1980), intentions to behave in a certain manner are considered acceptable surrogate measures for actual behavior. Other studies (e.g., Oz 2001) support this thinking.

Table 1. Demographic Characteristics of the Sample

	n	**Percent**
Gender		
Male	171	92
Female	15	8
Age		
18 – 25	17	9
26 – 35	63	34
36 – 45	49	26
46 – 55	45	24
56 and older	10	6
Missing	2	1
Management Level		
Lower (Operational)	33	17
Middle (Tactical)	87	48
Upper (Strategic)	62	33
Missing	4	2

The construct ***Awareness*** was measured using two items rated on a seven-point scale. These items reflected respondents' knowledge of the whereabouts of the IS code of ethics for their company as well as knowing that it can be used in dealing with ethically challenging situations. The ***Understanding*** of a code of ethics was measured using three items reflecting the respondents comprehension of the code and ability to explain the contents of the code to a colleague. Extent of ***Communication*** was measured by four items reflecting the number of mechanisms used to convey the code to employees both verbally and visually. Finally, ***Enforcement*** was measured using three items reflecting mechanisms in place to monitor employees and ensure their compliance with the code.

Table 2 lists the study's constructs and measures and their corresponding literature support.

Empirical Results

To test the hypothesized model, the partial least squares (PLS) approach to structural equation modeling (SEM) was employed. PLS-Graph (version 3.0, build 1196) was used. PLS was considered an appropriate alternative to more common maximum likelihood estimation (MLE) approaches to structural equation modeling such as LISREL as PLS makes no assumptions about scale of measurement and there are no distributional requirements (Fornell and Bookstein 1982). PLS allows both the measurement model (relationship between constructs and their indicators) and the structural model (relationship between constructs) to be assessed simultaneously. In specifying the measurement model, all constructs were modeled in the reflective mode.

Partial Least Squares Analysis

In the initial analysis of the measurement model, three ethical behavior items (Ethics1, Ethics5, and Ethics6) loaded poorly on the ethical behavior construct and were thus dropped. Two of these three items related to the third ACM canon: using special knowledge and skills for the advancement of human welfare. Thus ethical behavior was measured with three items that reflect the first two ACM canons only. Table 3 presents the final measurement model. All constructs displayed adequate reliability, item loadings were above 0.50 (Falk and Millar 1992) or close enough to be considered acceptable,[1] and internal consistency measures exceeded the minimum accepted cut-off level of 0.70. Convergent validity was established by examining the average variance

[1]Although item Enf3 loaded relatively low on the enforcement construct, it was retained as the loading was significant (t = 2.9) and the item was critical to the definition of the construct.

Table 2. List of Study's Constructs and Measures

Abbreviation	Constructs and Measures[a]	Literature Support
	Ethical Behavior	
Ethics1	I would knowingly allow my work to be used in socially irresponsible ways if I was being paid a substantial amount for it (r)	Udas et al. (1996)
Ethics2	I would intentionally misrepresent my qualifications to prospective clients to secure a deal (r)	Udas et al. (1996)
Ethics3	I would remain silent about part of an IT project that violated a national law if my immediate supervisor directed me to (r)	Udas et al. (1996)
Ethics4	In consulting with a client, I would exaggerate the degree of progress made on a system if I was running behind schedule (r)	Udas et al. (1996)
Ethics5	I would work on an IT system that would have a negative impact on the environment if my company allocated me to work on such a system (r)	Udas et al. (1996)
Ethics6	Even if I could make more money out of the sale of System 1, I would still recommend System 2, as it contributes more to the betterment of social conditions (r)	Udas et al. (1996)
	Communication	
Comm1	The code is always explained to new staff	Stead et al. (1990)
Comm2	All employees are sent on a training course that deals with my company's code of ethics and the ethical behavior advocated by the code	Fudge and Schlacter (1999) Kreie and Cronan (2000) Stead et al. (1990)
Comm3	If an unethical issue arises, this is discussed in staff meetings, with reference to the code	Kreie and Cronan (2000) Stead et al. (1990)
Comm4	The code is clearly visible on notice boards or the intranet	Snell et al. (1999)
	Awareness	
Aware1	I would know where to find the code	Schwartz (2001)
Aware2	I would consider referring to the code if I was faced with an ethically challenging scenario and I did not know how to act	Snell et al. (1999)
	Understanding	
Uoc1	I have read the code in its entirety	Schwartz (2001)
Uoc2	I understand the content of the code	Weeks and Nantel (1992)
Uoc3	I could explain the contents of the code to a fellow employee	Weeks and Nantel (1992)
	Enforcement	
Enf1	Each employee is required to sign a statement indicating that they have read and understood the code	McCabe et al. (1996)
Enf2	The code states the enforcement procedures that the company will adopt if an employee acts against the code	Udas et al. (1996)
Enf3	My company uses monitoring and surveillance systems/software to make sure employees behave ethically	Kreie and Cronan (2000)

[a]All items were measured on a seven-point Likert scale from 1= strongly disagree to 7 = strongly agree

extracted (AVE) for each construct. Table 4 presents the correlations between the model's latent constructs with the square root of the AVE for each construct on the diagonal. Discriminant validity was established by ensuring that the entries on the diagonal were greater than the entries in the corresponding rows and columns. This ensures that a construct shares more variance with its own indicators than it does with other constructs in the model.

Table 3. Tests of the Measurement Model for Multi-Item Constructs

Construct and Indicators	Loading [a]	Internal Consistency [b]	AVE [c]	Square Root of AVE [d]
Communication		.88	.64	.80
Comm1	.83			
Comm2	.79			
Comm3	.83			
Comm4	.75			
Awareness		.80	.67	.82
Aware1	.82			
Aware2	.82			
Understanding		.94	.84	.92
Uoc1	.86			
Uoc2	.96			
Uoc3	.93			
Enforcement		.78	.55	.74
Enf1	.85			
Enf2	.84			
Enf3	.49			
Ethical Behavior		.80	.57	.75
Ethic2	.63			
Ethic3	.81			
Ethic4	.81			

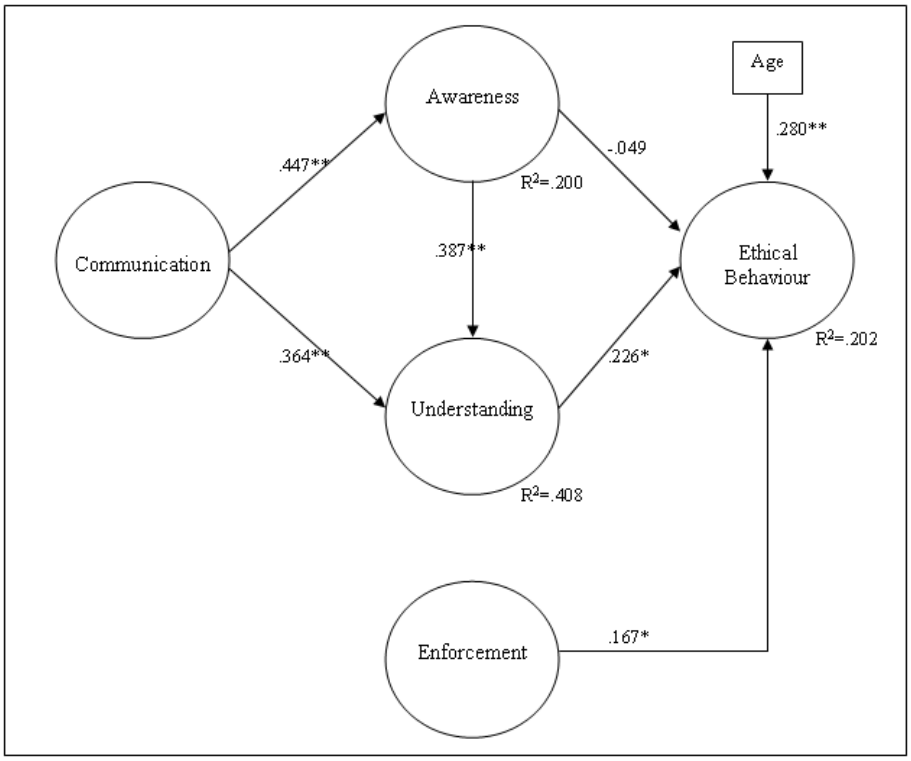
[a]Loadings are similar to loadings in a principal components analysis.
[b]Fornell and Larcker's internal consistency measure.
[c]Average variance extracted (AVE) used to establish convergent validity.
[d]Square root of the AVE used to establish discriminant validity (should be greater than corresponding rows and columns in correlation matrix, see Table 4).

Table 4. Correlations Between Latent Constructs

	Communication	Awareness	Understanding	Enforcement	Ethical Behavior
Communication	.80[#]				
Awareness	.447	.82			
Understanding	.537	.550	.92		
Enforcement	.542	.479	.379	.74	
Ethical Behavior	.292	.189	.317	.265	.75

[#]square root of AVE on diagonal

Once the measurement model had been considered acceptable, the path coefficients in the structural model were assessed. Figure 2 presents the results of the test of the structural model. Bootstrapping (500 resamples) was used to calculate the *t*-values associated with the path coefficients. The *t*-value was calculated as the mean path coefficient divided by the standard error produced by the PLS output.



**significant at the p < 0.01 level
*significant at the p < 0.05 level

Figure 2. PLS Analysis of Structural Model

Paths from communication to both awareness and understanding were found to be significant. This provides strong support for the importance of communication in, first, increasing employee's knowledge of the code and, second, increasing employees' likelihood of internalizing the code's content. It is thus critical that organizations realize the importance of communication in the implementation of a code of ethics (Fisher 1993; Harshman and Harshman 1999; Pierce and Henry 1996; Stead et al. 1990; Trevino and Nelson 1995).

Although a significant effect of awareness on ethical behavior was expected (Adams et al. 2001; Kreie and Cronan 2000), the direct path from awareness to ethical behavior was not supported. The insignificant effect of awareness on behavior may be a result of the weakness in the construct's measurement. However, the path from understanding to behavior was both positive and significant. Moreover, awareness was found to have an indirect effect on ethical behavior through its effect on understanding. This suggests that the usefulness of a code as a referent occurs only after it has been thoroughly understood. The model thus confirms the importance of code understanding and the role it plays in influencing ethical behavior (Ashkansay et al. 2000; Weaver 1995). Codes are more effective in influencing ethical behavior when they are understood.[2]

Enforcement was also found to have a significant influence on ethical behavior. The importance of age as a control variable was confirmed. Age is significantly related to ethical behavior such that older IS professionals are more likely to behave ethically.

Results of the study strongly support the hypothesized model and hypotheses 2, 3, 4, and 5 were confirmed. The model explains over 20 percent of the variance in ethical behavior (R^2 = .202), with communication accounting for a large percentage of variance in both awareness (R^2 = .200) and understanding (R^2 = .408). Thus the predictive power of the model is confirmed.

[2]A *post hoc* mediation test, which included a direct path from communication to ethical behavior, confirmed that communication has no direct effect on ethical behavior. Its effect on behavior occurs through awareness and understanding.

Despite the model's success, 80 percent of ethical behavior is left unexplained. Other than codes of ethics, various individual and organizational factors (for a review, see Bommer et al. 1987; Loe et al. 2000; Stead et al. 1990) may influence ethical behavior. Moreover, these factors may emerge as important moderators of the effect of codes of ethics on the ethical behavior of IS professionals. Future research should empirically test these relationships.

Managerial Implications

The thesis of this paper that codes of ethics will be effective in influencing the behavior of IS personnel if they are communicated and enforced has been largely supported. Results demonstrate that once codes have penetrated into the minds of IS employees, these employees are more likely to behave in accordance with the guidelines. Enforcement sends a message that sanctions for unethical behavior exist and the fear of punishment serves as a useful deterrent to unethical behavior.

Results thus suggest that the ethical behavior of IS personnel can be influenced by organizational action and, therefore, that managers should get involved in the moral development of employees. Managers must recognize that employees are often faced with ethical dilemmas and should attempt to influence the ethical behavior of IS employees through the purposeful communication and enforcement of a code of ethics. A code is unlikely to be of any use unless managers ensure that all IS employees are aware of and understand the code's content. To ensure that employees are aware of and understand the code's content, communication of codes must become an important component of any organization's ethics management system. Communication of the code can occur through mechanisms such as training, staff discussions and high visibility. Furthermore, as suggested by McDonald and Nijhof (1999), managers should determine whether their existing disciplinary process is significantly effective in dealing with unethical behavior. Managers must realize that enforcement is necessary for preventing unethical practices from being perpetuated (McDonald and Nijhof 1999). Enforcement through monitoring systems, sanctions, and penalties will help to ensure code compliance. Findings also suggest that the above recommendations become increasingly important in those organizations with a younger work force.

Conclusion

This study has significant implications for IS managers charged with the responsibility for managing IS personnel and promoting their ethical behavior. This study found that ethical behavior of IS professionals can be positively influenced and that codes of ethics can be effective in this regard. However, organizations need to do more than just formulate a code of ethics. To influence IS professional behavior, the code needs to be extensively communicated and there should also be enforcement mechanisms in place. It was found that communication of the code influences the IS professional's understanding of the code, which in turn emerged as an important factor influencing ethical behavior. Future research should extend this model to enhance the explanation of how codes of ethics can be effective in influencing ethical behavior in the IS environment.

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